

We Claim:

1. A switching regulator, comprising:

an intermediate circuit capacitor at which an output voltage can be tapped;

a current measuring element;

a diode connected to said intermediate circuit capacitor;

a power switch connected to said current measuring element and connected in parallel with said intermediate circuit capacitor through said diode, said power switch controlling a charging current of said intermediate circuit capacitor; and

a drive circuit receiving an intermediate circuit input voltage, the output voltage from said intermediate circuit capacitor and an output current at said current measuring element, said drive circuit controlling electrical output parameters and a power factor of the switching regulator in accordance with an adjustable desired value by controlling a duty ratio of said power switch, said drive circuit having a start circuit set up for dynamically increasing a current limiting level for said power switch during a specific start time after a switch-on instant of the switching regulator from an initially low level up to a current-limiting desired level

at an end of the specific start time, without said drive circuit limiting the duty ratio of said power switch during the specific start time.

2. The switching regulator according to claim 1, wherein said start circuit continuously increases the current limiting level.

3. The switching regulator according to claim 2, wherein said start circuit has a time-determining element for determining the specific start time and a rate of increase of the current limiting level.

4. The switching regulator according to claim 3, wherein said start circuit increases the current limiting level with a rate of increase such that a start of the switching regulator is ensured under all load conditions.

5. The switching regulator according to claim 2, wherein said start circuit increases the current limiting level with a rate of increase such that a minimal loading on components of the switching regulator is ensured during a start of the switching regulator.

6. A drive circuit functioning as an active harmonic filter for driving a switching regulator having an intermediate

circuit, an intermediate circuit capacitor, disposed in a shunt path of the intermediate circuit, a diode, and a power switch connected in parallel with the intermediate circuit capacitor through the diode and controls a charging current of the intermediate circuit capacitor, the drive circuit comprising:

a first control amplifier receiving an actual output voltage from the intermediate circuit of the switching regulator and an adjustable desired output voltage, said first control amplifier generating a first control voltage from the actual output voltage and the adjustable desired output voltage;

a multiplier connected to said first control amplifier and receiving the first control voltage and a rectified input voltage from the intermediate circuit of the switching regulator, said multiplier generating a desired current level from the first control voltage and the rectified input voltage;

a second control amplifier receiving, from said multiplier, the desired current level and a signal derived from an actual output current level of the intermediate circuit of the switching regulator, said second control amplifier generating a second control voltage in accordance with the desired

current level and the signal derived from the actual output current level;

a third control amplifier receiving the actual output current level of the intermediate circuit of the switching regulator and a current-limiting desired value, said third control amplifier generating a third control voltage for controlling a maximum current level through the power switch from the actual output current level of the intermediate circuit of the switching regulator and the current-limiting desired value;

a PWM driver circuit receiving at least the second and third control voltages and generating corresponding control pulses for controlling a duty ratio of the power switch; and

a start circuit dynamically increasing a current limiting level for the power switch during a specific start time after a switch-on instant of the switching regulator from an initially low level up to a current-limiting desired value at an end of the specific start time, without the drive circuit limiting the duty ratio of the power switch during the start time.

7. The drive circuit according to claim 6, wherein:

said multiplier has an output;

said second control amplifier has an input; and

said start circuit is connected to said output of said multiplier and said input of said second control amplifier, said input of said second control amplifier receives the signal derived from the actual output current level of the switching regulator, said start circuit configured to give the signal a profile rising in a ramped fashion.

8. The drive circuit according to claim 6, wherein:

said third control amplifier has an input; and

said start circuit is connected to said input of said third control amplifier, said input of said third control amplifier receives the current-limiting desired value, said start circuit configured to give the current limiting level a profile rising in a ramped fashion.

9. The drive circuit according to claim 6, wherein said start circuit has a time-determining element for setting the specific start time and a rate of increase of the current limiting level rising in a ramped fashion.

10. The drive circuit according to claim 6, wherein said start circuit increases the current limiting level with a rate of increase such that the start of the switching regulator is ensured under all load conditions.

11. The drive circuit according to claim 6, wherein said start circuit increases the current limiting level with a rate of increase such that a minimal loading on components of the switching regulator is ensured during the start of the switching regulator.